Revue suisse de Zoologie 120 (4): 537-547; décembre 2013

Review of the Afrotropical species of *Deleaster* Erichson, 1839 (Coleoptera, Staphylinidae, Oxytelinae)

Giulio CUCCODORO[1] & György MAKRANCZY[2]
[1] Muséum d'histoire naturelle, Case postale 6434, CH-1211 Genève 6, Switzerland.
E-mail: giulio.cuccodoro@ville-ge.ch
[2] Hungarian Natural History Museum, Baross utca 13, H-1088 Budapest, Hungary.
E-mail: makranczy@zoo.nhmus.hu

Review of the Afrotropical species of *Deleaster* Erichson, 1839 (Coleoptera, Staphylinidae, Oxytelinae). - The Afrotropical species of the genus *Deleaster* are reviewed. A lectotype is designated for the single known species, *Deleaster pectinatus* Fauvel, 1882, and two additional species, *D. gibbosus* sp. n. from Ruwenzori range in Zaire and Uganda and *D. negus* sp. n. from Ethiopia, are described.
These three species are illustrated in colour by habitus photographs, SEM images of relevant morphological characters and the males of the two new species by line drawings of terminalia and genitalia.

Keywords: Taxonomy - lectotype - new species - Afrotropics - Ethiopia - Uganda - Zaire.

INTRODUCTION

The oxyteline genus *Deleaster* Erichson, 1939 is currently placed in Euphaniini Reitter, 1909, previously Deleasterini Reitter, 1909 (see Bouchard *et al.*, 2011). The genus contained eight extant valid species, two of them Nearctic, five Palaearctic, and one Afrotropical (Grebennikov, 2002). The latter comes from above 3300 m a.s.l. in the subalpine zone of Ethiopian highlands, and is presumed to have rather narrow distributional range.

A detailed examination of material from various sources provided evidence that three closely related species occur in the Afrotropical realm. At present, the sole named African species, *Deleaster pectinatus* Fauvel, 1882, is only known from its original type material consisting of two females (one of them in fragments). The remaining specimens represent the two new species described herein. As most of the natural habitats in densely populated parts of Africa are threatened by human activity, the assessment of the biodiversity there appears particulary urgent.

MATERIAL AND METHODS

Habitus photography was made with a Nikon D4 camera with Rodenstock Apo-Rodagon N 50/2.8 lens and layers montaged with ZereneStacker. The SEM images and line drawings were done by the second author, the former with a Hitachi S-2600 N

Manuscript accepted 19.09.2013

scanning electron microscope. Images were taken of uncoated specimens and the equipment was used both in the more usual "3D mode" and the "Compo" mode as the latter was preferred for certain kinds of details. For descriptions and measurements a Leica MZ 12.5 stereoscopic microscope was used. For the line drawings permanent preparations were made in Euparal mounting medium on plastic cards pinned with the specimens. Techniques are described in detail in Makranczy (2006). Drawing was done with a Jenalab (Carl Zeiss, Jena) compound microscope and drawing tube (camera lucida).

Abbreviations for the measurements: HW = head width with eyes; TW = head width at temples; PW = maximum width of pronotum; SW = approximate width of shoulders; AW = maximum width of abdomen; HL = head length (from front margin of clypeus to the beginning of neck in the mid-line); EL = length of eye; TL = length of temple; PL = length of pronotum in the mid-line; SL = length of elytra from shoulder; SC = length of elytra from hind apex of scutellum; FB = forebody length (combined length of head, pronotum and elytra); BL = approximate body length. All measured are taken in dorsal view.

The label data of the types of *D. pectinatus* are reproduced literally in " ", the slash "\" is a separator between each individual label, while ";" indicates line breaks. Text within brackets [ ] is explanatory.

The material studied is deposited in the following collections: ISNB = Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (D. Drugmand); MHNG = Muséum d'histoire naturelle de la ville de Genève, Switzerland; MRAC = Musée Royal de l'Afrique Centrale, Tervuren, Belguim (M. De Meyer); NHMB = Naturhistorisches Museum Basel, Switzerland (E. Sprecher); NHMW = Naturhistorisches Museum Wien, Austria (H. Schillhammer); ZMUN = Natural History Museum, University of Oslo, Oslo, Norway (V. Gusarov).

TAXONOMY

Key to the Afrotropical *Deleaster* species

1a Pubescence on laterobasal portion of abdominal tergites diverging; pectinate middle (comb) of apical edge on tergite VIII without short mesal denticle [North Ethiopia, Mts. Abboï-Miéda/Ābuyē Mēda] . . . . . *D. pectinatus* Fauvel

1b Pubescence on laterobasal portion of abdominal tergites parallel; pectinate middle (comb) of apical edge on tergite VIII with at least one short mesal denticle 2

2a Elytra with posterior portion of disc not swollen; posterior portion of sutural margin in level with disc; posterior margin of elytra arcuate [South Ethiopia, Mts. Gughe] . . . . . *D. negus* n. sp.

2b Elytra with posterior portion of disc swollen; posterior portion of sutural margin below level of disc; posterior margin of elytra subangulate. [Ruwenzori range in Zaire and Uganda] . . . . . *D. gibbosus* n. sp.

Deleaster pectinatus Fauvel, 1882 Figs 1, 4, 8-9, 12-13

Deleaster pectinatus Fauvel, 1882: 129. – Herman, 2001: 1326.

LECTOTYPE (♀, here designated): "S/[ous] les pierres bord; des torrents [Amhara Region,] Mts.; Abboïmiéda [Abboï-Miéda/Ābuyē Mēda, 10.517°N, 39.767°E] (Abyssi;nie) 3800 à 4000 m; 7bre [Septembre 1881, leg. A. Raffray] \ pectinatus; Fvl. \ Deleaster; Er. \ R.I.Sc.N.B. 17.479; Deleaster; Coll. et det. A. Fauvel \ ♀ \ Deleaster; pectinatus Fauvel; det. Makranczy, 2001 \ Lectotype; Deleaster; pectinatus Fauvel; Des. G. Cuccodoro; & Gy. Makranczy 2012" (ISNB).

PARALECTOTYPE (1): same data as lectotype, 1♀ without head (ISNB).

OTHER MATERIAL EXAMINED: none.

REDESCRIPTION

Measurements (n = 1; unit = mm): HW = 1.26; TW = 1.10; PW = 1.22; SW = 1.76; AW = 2.13; HL = 0.91; EL = 0.53; TL = 0.11; PL = 1.03; SL = 2.24; SC = 2.13; FB = 4.38; BL = 7.18.

Habitus as in Fig. 1. Body predominantly reddish brown to dark brown, with head slightly darker and legs, scape, pedicel and borders of abdomen paler. Pubescence dense, with fine, short, depressed hairs, rather inconspicuous; presence of some darker, stronger, erect bristles near pronotal angles.

Head (Fig. 4) rather transverse with clypeus strongly projecting, latter slightly narrower than in the other species. Frontoclypeal (epistomal) suture marked as a strongly impressed transversal groove; surface of clypeus shiny but with very fine coriaceous microsculpture and traces of punctation. Vertex with gently curved, broad grooves (with remnants of ocelli in their middle) extending anterolaterally from middle of neck margin to middle of inner eyes margin, forming together a rather V-shaped impression surrounding disc filled with dense granulose microsculpture similar to that in the groove delineating dorsal part of neck; disc shiny but sparsely punctate with dome-like convexity only feebly delimited from the gentle supraantennal protuberances by shallow longitudinal impressions, latter almost smooth. Antennae (Fig. 12) with third antennomere as long as first, other articles approximately twice as long as broad.

Pronotum (Fig. 4) narrowing posteriorly with lateral margins sinuate; hind angles rather sharp; lateral portions of posterior margin slightly arcuate; presence of two gently protruding knob-like elevations near posterior angles; presence of shallow, curved subbasal impression filled with rough microsculpture; presence of two shallow semi-longitudinal impressions anteriad posterior angles filled with dense punctation and microsculpture making them opaque; medial groove shallow, evanescent in subbasal impression; disc with fine coriaceous/substrigulate microsculpture (except in middle just anteriorly subbasal median spots) in directionality surrounding centre, less distinct than the relatively strong, sparse punctation on centre of disc. Elytra with postscutellar area shortly depressed longitudinally; posterior portion of disc only slightly swollen; posterior portion of sutural margin just slightly below level of disc; posterior margin arcuate (Fig. 8). Legs relatively long and slender, protarsus and in a lesser extent mesotarsus with articles 1 to 4 expanded, outer halves of mesotibia and metatibia with distinct ctenidium consisting of spinules.

Abdomen broadest in middle, narrowing anteriorly and posteriorly; laterosternites very broad. Pubescence on laterobasal parts of tergites (Fig. 13) directed strongly outwards. Pectinate middle (comb) of apical margin of tergite VIII as in Fig. 9.

FIGS 1-3
Habitus of *Deleaster* species. (1) *D. pectinatus* Fauvel, lectotype; (2) *D. negus* sp. n., holotype; (3) *D. gibbosus* sp. n., holotype.

Sexual characters: Female sternite VIII expanded subapically, subtriangular, narrowly rounded apically, with tiny irregular incisions on apical margin. The male of this species is unknown, but externally the males and females in the closely related species do not seem to have any consistent differences, except that the apex of sternite IX is in males often exposed (as on Fig. 16), while its absence suggests the opposite sex, even if the coxites (only present in females) cannot be readily seen. Both sexes in these three species have conspicuous medioapical comb-like structures of tergite VIII, and they are similar in all examined specimens.

DISTRIBUTION: The species is known only from Ethiopia, from its type locality that appears to be the northernmost occurrence for the genus in the Afrotropics.

COMMENTS: *Delaster pectinatus* is easily distingusished from its Afrotropical congeners by the presence on abdominal tergite VIII of a comb lacking minute mesal denticle. The description erroneously mentions two male specimens. Albert Fauvel might have been confused by the "pectinate" apex of the tergite VIII considered as a male secondary sexual character, while it is similar in both sexes.

The types labels miss the informations pertaining to their collector and collecting year. Fauvel (1882) indicates in the orginal description that the collector is Achille Raffray. We pinpoint here that the collection year is 1881 (Raffray 1882).

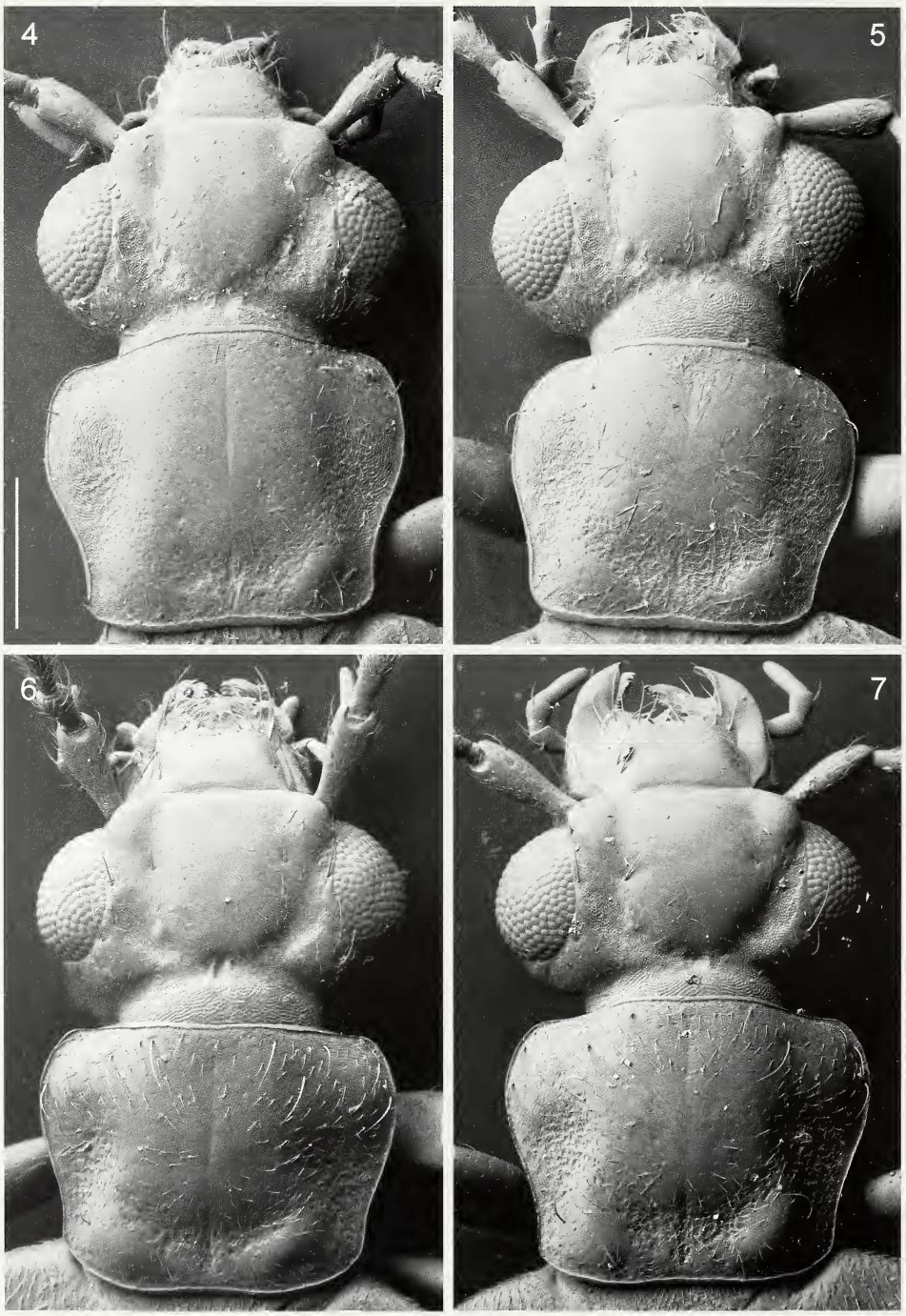
Deleaster gibbosus new species Figs 3, 6-7, 11, 14-20

HOLOTYPE (♂): DEMOCRATIC REPUBLIC OF CONGO (ZAIRE): North Kivu, Northern face of Ruwenzori, camp de Kilindera [0°23'N, 29°55'E], 2750 m, VII-VIII.1974, [leg.] R.P.M. Lejeune, à la lampe U.V. (MRAC).

PARATYPES (7): same data as holotype, 1♂ (MRAC); UGANDA: Western Region, Kasese District, 8km NWW Nyakalengija, Rwenzori Mts. National Park, main trail from John Matte Hut to Nyabitaba Hut, Mubuku River, 0°21.481'N, 29°58.331'E, 2538m, 17.VIII.2008, [leg.] V.I. Gusarov (3551), river banks near bridge 1♂, 3ex. [DNA sample barcodes 10073492, 10073493, 10073495] (ZMUN), 1♀ (MHNG), 1♂ (NHMW).

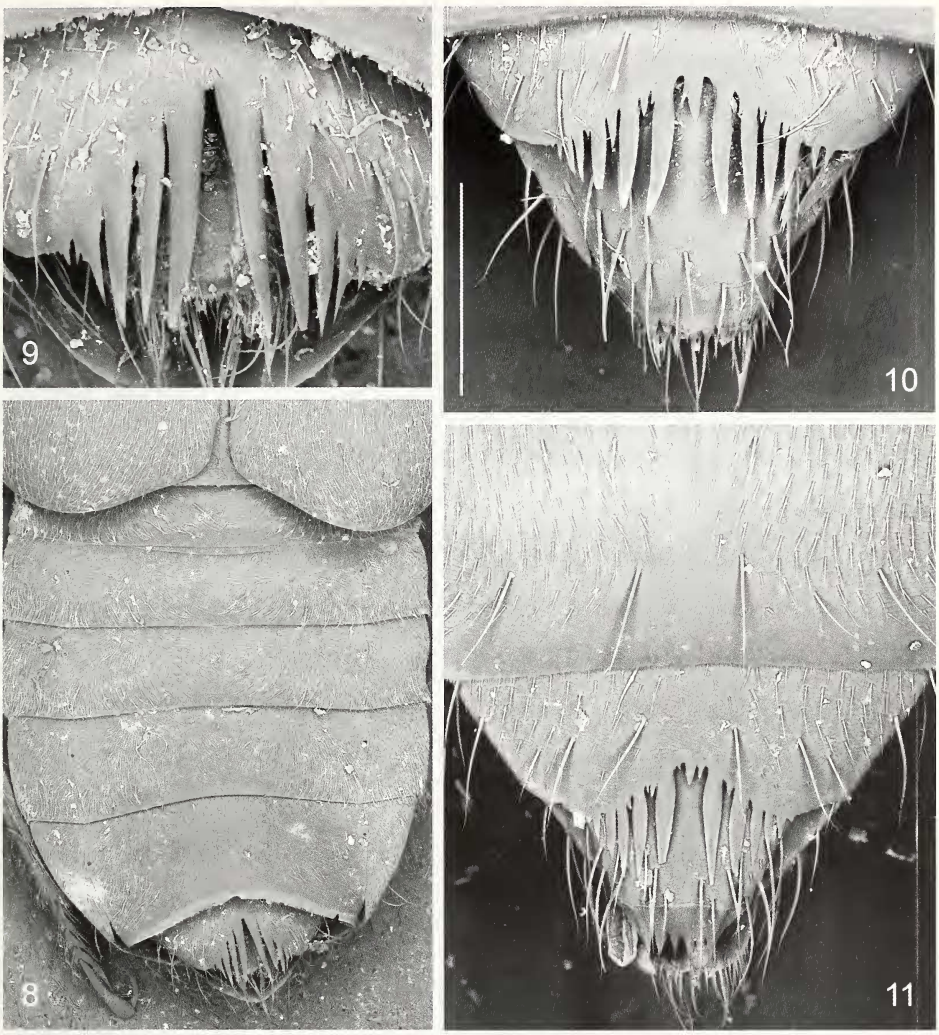
DESCRIPTION: Measurements (n = 5; unit = mm): HW = 1.22 (1.16-1.29); TW = 1.05 (0.99-1.09); PW = 1.17 (1.08-1.22); SW = 1.72 (1.61-1.78); AW = 1.95 (1.80-2.10); HL = 0.82 (0.75-0.87); EL = 0.45 (0.44-0.47); TL = 0.14 (0.12-0.16); PL = 0.96 (0.91-1.00); SL = 2.14 (2.02-2.26); SC = 1.97 (1.83-2.08); FB = 4.21 (3.94-4.40); BL = 6.64 (6.20-7.11).

Similar to *D. pectinatus*, from which it may be distinguished as follows: habitus as in Fig. 3; scape and pedicel almost concolorous with flagellum; head as in Figs 6-7; clypeus slightly trapezoid; frontoclypeal (epistomal) suture marked as a slightly impressed transversal groove; vertex with markedly curved, broad grooves (with the remnants of the ocelli in their middle) extending anterolaterally from middle of neck margin to middle of inner eyes margin, forming together a rather U-shaped impression surrounding disc, filled with dense granulose microsculpture unlike the imbricate microsculpture filling most of the groove delineating dorsal part of neck; pronotum (Figs 6-7) with hind angles rather blunt; lateral portions of posterior pronotal margin broadly arcuate; presence of two rather strongly protruding knob-like elevations near posterior pronotal angles; presence of deep, curved pronotal subbasal impression; medial pronotal groove shallow, distinct on entire length, including in subbasal



FIGS 4-7

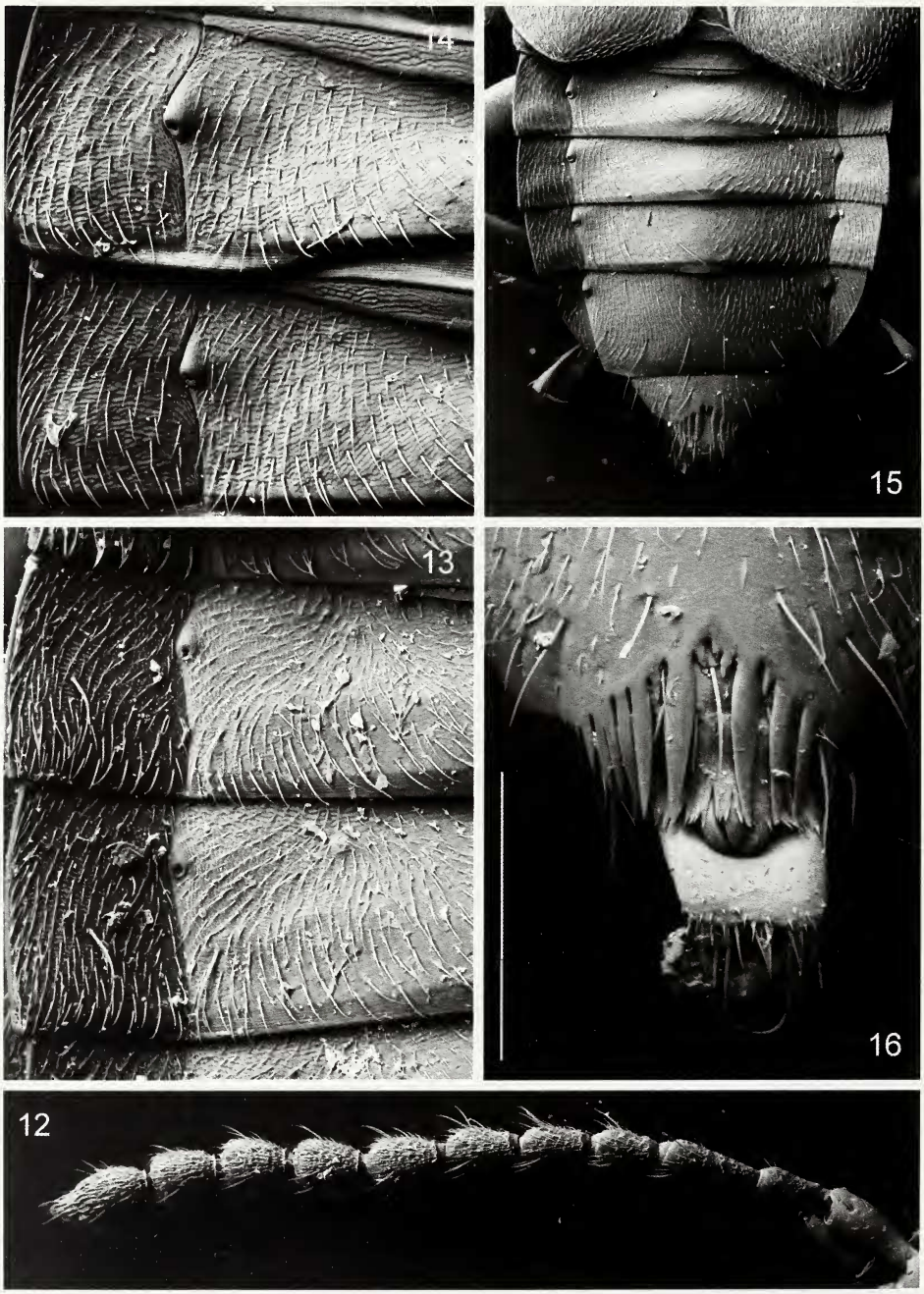
SEM of head and pronotum. (4) *Deleaster pectinatus* Fauvel; (5) *D. negus* sp. n.; (6, 7) *D. gibbosus* sp. n., N Kivu (6) and W Uganda (7). Scale bar = 0.5 mm.



FIGS 8-11

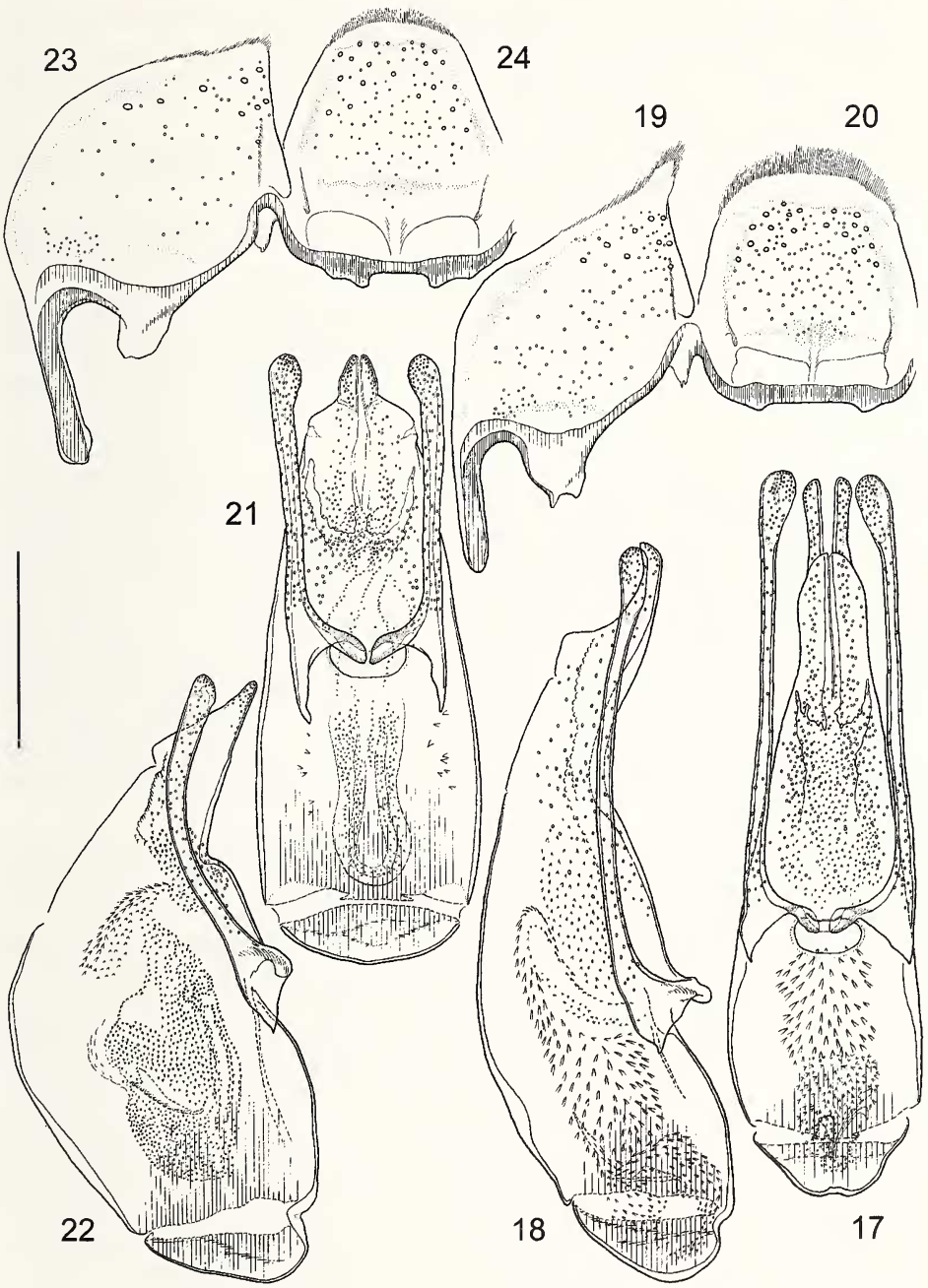
(8-9) *Deleaster pectinatus* Fauvel, elytral apex and abdomen (8), apex of tergite VIII (9). (10) *D. negus* sp. n., abdominal apex. (11) *D. gibbosus* sp. n., abdominal apex. All in dorsal view, SEM in "Compo" mode. Scale bar = 0.25 mm for (9), 0.35 mm for (10), 0.40 mm for (11) and 1.00 mm for (8).

impression; pronotal disc filled with conspicuous medium/fine substrigulate microsculpture, in directionality surrounding centre, latter with scattered, fine and inconspicuous punctation; elytra with posterior portion of disc conspicuously swollen; posterior portion of sutural margin markedly below level of disc; posterior elytral margin subangulate (Fig. 15); abdomen with pubescence on laterobasal parts of tergites (Fig. 14) directed only slightly outwards; pectinate middle (comb) of apical margin of abdominal tergite VIII as in Fig. 11.



FIGS 12-16

(12-13) *Deleaster pectinatus* Fauvel, antenna (12) and lateral part of abdomen (13), dorsal view. (14-16) *D. gibbosus* sp. n. lateral part of abdomen (14), elytral apex with abdomen (15) and abdominal apex (16), dorsal views. All SEM in "3D mode". Scale bar = 0.35 mm for (16), 0.80 mm for (15), 1.00 mm for (12-14).



FIGS 17-24

(17-20) *Deleaster gibbosus* sp. n., male, aedeagus frontal (17) and lateral (18) views, tergites IX (19) and X (20). (21-24) *D. negus* sp. n., male, aedeagus in frontal (21) and lateral (22) views, tergites IX (23) and X (24). Scale bar = 0.34 mm for (17-18), 0.40 mm for (19-24).

Sexual characters: Female abdominal sternite VIII sinuate subapically, broadly rounded and very finely serrate on apical margin. Male abdominal tergite IX as in Fig. 19; tergite X as in Fig. 20; sternite VIII broadly produced on apex, with membranous edge; aedeagus as in Figs 17-18.

ETYMOLOGY: The Latin name of the new species means "humped" and refers to the conspicuously swollen posterior part of the elytra.

DISTRIBUTION: The species is known only from the Ruwenzori range in the Democratic Republic of Congo (Zaire) and Uganda.

COMMENTS: Within Afrotropical *Deleaster*, the presence of conspicuously swollen posterior portion of elytral disc is diagnostic for *D. gibbosus*. The species shares with *D. negus* the presence on abdominal tergite VIII of a comb with a minute mesal denticle, but the two species have very distinctive aedeagi.

Deleaster negus new species Figs 2, 5, 10, 21-24

HOLOTYPE (♂): ETHIOPIA: SNNPR [Southern Nations, Nationalities and Peoples' Region], Gamu Gofa, Gughe Mts., 6km SW Chencha, 6.2031°N, 37.5605°E, 2515m, 05.VIII.2008, leg. J. Beck, automatic light trap (7-11pm), edge of a large pasture next to forest fragment in good condition, apart from dead wood collecting (NHMB).

PARATYPES (9): same data as holotype, 2♂, 3♀ (NHMB), 1♂, 1♀ (MHNG), 1♂ (MRAC), 1♂ (NHMW).

DESCRIPTION: Measurements (n = 10: unit = mm): HW = 1.27 (1.22-1.31); TW = 1.09 (1.04-1.12); PW = 1.19 (1.15-1.23); SW = 1.73 (1.66-1.86); AW = 2.05 (1.95-2.22); HL = 0.85 (0.83-0.87); EL = 0.51 (0.48-0.54); TL = 0.13 (0.10-0.15); PL = 1.02 (0.97-1.06); SL = 2.09 (1.98-2.21); SC = 1.96 (1.81-2.10); FB = 4.32 (4.05-4.56); BL = 7.11 (6.18-7.89).

Similar to *D. pectinatus*, from which it may be distinguished as follows: habitus as in Fig. 2; scape and pedicel almost concolorous with flagellum; head as in Fig. 5; vertex with markedly curved, broad grooves (with the remnants of the ocelli in their middle) extending anterolaterally from middle of neck margin to middle of inner eyes margin, forming together a rather U-shaped impression surrounding the disc, filled with dense granulose microsculpture unlike the imbricate microsculpture filling most of the groove delineating dorsal part of neck; pronotum (Fig. 5) with hind angles evenly rounded; presence of two rather strongly protruding knob-like elevations near posterior pronotal angles; presence of deep, curved pronotal subbasal impression; medial pronotal groove very fine, indistinct posteriorly, an indistinct coriaceous/substrigulate microsculpture in directionality surrounding the centre of pronotal disc, but there missing on larger spots, leaving the surface smooth and shiny; elytra with post-scutellar area gently depressed till middle of suture; posterior portion of elytral disc not swollen; posterior portion of sutural margin on level with disc; abdomen with laterosternites moderately broad; pubescence on laterobasal parts of tergites not directed outwards; pectinate middle (comb) of apical margin of abdominal tergite VIII as in Fig. 10.

Sexual characters: Female abdominal sternite VIII expanded subapically, subtriangular, narrowly rounded apically and with couple of tiny (and occasionally also

1-2 larger) incisions on apical margin. Male abdominal tergite IX as in Fig. 23; tergite X as in Fig. 24; sternite VIII with slightly and narrowly produced apex, with membranous edge; aedeagus as in Figs 21-22.

ETYMOLOGY: The specific epithet 'negus' refers to the title of king in Ethiopia. It is a noun in apposition.

DISTRIBUTION: The species is known only from Ethiopia, from its type locality that lies more south than that of *D. pectinatus* Fauvel.

COMMENTS: *Deleaster negus* is the only Afrotropical member of the genus to possess on the abdominal tergite VIII a comb with a minute mesal denticle in combination with the posterior portion of the elytral disc lacking hump.

ACKNOWLEDGEMENTS

Thanks are due to the curators listed under the material section for loan of types and material under their care. The second author is grateful to the first author who arranged the visit in MHNG and gave an opportunity to the studies that resulted in the present article. The SEM images were taken with financial help of the Hungarian Scientific Research Fund (OTKA No. 69235, principal investigator Zoltán Korsós). The authors warmly thank Harald Schillhammer (NHMW) for the colour habitus photographs and Alfred Newton (Field Museum of Natural History, Chicago), who helped with a copy of the rare publication of Raffray from the Newberry Library (Chicago), unobtainable mostly for its brittle paper.

REFERENCES

BOUCHARD, P., BOUSQUET, Y., DAVIES, A. E., ALONSO-ZARAZAGA, M. A., LAWRENCE, J. F., LYAL, C. H. C., NEWTON, A. F., REID, C. A. M., SCHMITT, M., ŚLIPIŃSKI, A. A., SMITH, A. B. T. 2011. Family-group names in Coleoptera (Insecta). *ZooKeys* 88: 1-972.

FAUVEL, A. 1882. Deux staphylinides de l'Abyssinie subalpine. *Revue d'Entomologie* 1: 129-131.

GREBENNIKOV, K. A. 2002. Western Palaearctic species of the genus *Deleaster* Erichson, 1839 (Coleoptera: Staphylinidae: Oxytelinae). *Zoosystematica Rossica* 10(2): 373-378.

MAKRANCZY, GY. 2006. Systematics and phylogenetic relationships of the genera in the *Carpelimus* group (Coleoptera: Staphylinidae: Oxytelinae). *Annales historico-naturales musei nationalis hungarici* 98: 29-119.

RAFFRAY, A. 1882. Voyage en Abyssinie et au pays de Gallas-Raïas. *Bulletin de la Société de Géographie (de Paris)* (7)3(1): 324-351, altitude table (p. 352), 2 maps.